The final exam will cover only Chapter 7 of the textbook, this includes all the sections, from §7.1 to §7.8. You are responsible for knowing all the lecture note problems and the problems assigned in the homework. The topics and skills you **will need** to know include:

- Simlifying rational expressions - This includes being able to factor quadratics from Chapter 6 using grouping, special formulas, and the box/x-method strategies. Answers **MUST** be completely simplified to receive full credit.

- Operations on rational expressions - This includes multiplication, division, addition, and subtraction. Remember that when subtracting rational expressions, that the minus sign gets distributed to all the pieces. Use parentheses if you need to, so that you remember to distribute signs correctly.

- Undefined versus zero - Recall what the difference between an undefined point and a zero of a function. The **zeros of a function** are the points where $f(x) = 0$, that is the points you plug into $f(x)$ that give you zero out. The **undefined points** of $f(x)$ are the points where the *denominator* is equal to zero.

- Hints for Addition/Subtraction - You will have questions asking you to perform additions/subtractions with the denominators not being the same. Do not attempt to multiply two quadratics together, as you will be wasting a lot of time and the result will be near impossible to simplify. **USE THE LCD** for simplifying the addition/subtraction.

- If one of the pieces in the expression has no denominator, it is implicitly a 1. Write this in and find the LCD as before to complete the question.

- You will be asked to reduce complex fractions. This means a fraction divided by a fraction. There are a variety of ways of going about this. I suggest that you simplify the top and bottom fractions separately first. Then do the "Keep, Change, Flip" process, then reduce what you can. You can always use the rule $\frac{\frac{A}{B}}{\frac{C}{D}} = \frac{A}{B} \cdot \frac{D}{C}$ form as we did in A systematic way of solving the problem every time will be very useful for the test.

- Solving Rational Equations - Here I'm looking for you to solve the expression for x. You will always want to check that the answer you get makes sense in the original problem statement. If you plug in the value and it gives you 0 in the denominator, this value is thrown out. If no values work, there is no solution. Again, this goes back to the idea of bullet point 3.

- There will be **3 WORD PROBLEMS** on the test. I understand that most everyone is not fond of these. You will have to solve word problems in future courses (MATH 425, MATH 25, and beyond). It is good to get used to the methods now rather than later. I have given the basic strategies for a setup for each type of problem. Create the chart for the distance-rate problems! This is the easiest way to keep track of the variables and solving the equation. There will be a distance-rate problem on the final!

    ADVICE: For the final exam, I **HIGHLY RECOMMEND** that you work through problems that I have gone over in lecture. I have presented a variety of different flavors of problems in the lecture. Since there is only 8 sections to be covered on the final, more than one question will be asked for some sections. When this is the case, there will be one easier question and one harder question for that section. Remember that you can only choose one problem for extra credit, so you **WILL** have to do some of the harder questions for some sections.

    I will be posting a practice final online as well, just as I have done for the midterms. The practice exam should be a **GUIDE** for what to expect on the exam. For the final, there will be questions slightly harder than the practice exam, and ones that are the same level. The final should take you longer than the two midterms, as the questions are tougher than what we have seen because there is a lot more going on. Take your time on your work! There is 2 hours and 15 minutes, you should carefully check your answers, and use the checks that we have gone over in class to make sure your answer is right.

HIGH PRIORITY PROBLEMS

These are high priority questions that you will have to be able to know how to solve, as the procedure to solve them will appear on the final in at least one problem.

§7.1 - 47, 48, 49, 50, 51, 53, 83, 84
§7.2 - 47-54
§7.3 - 77-80
§7.4 - 47-50, 56, 63, 64, 79, 80
§7.5 - 45 -56
§7.6 - 35-38, 66-70
§7.7 - Problems that were covered in lecture (You will be asked a distance-rate-time problem)
§7.8 - Problems that were covered in lecture

LOWER PRIORITY PROBLEMS

These are lower priority questions that may appear on the exam. You may find the procedures useful on at least one problem. Even though these are lower priority, it is still necessary that you understand how to do these problems for future courses.

§7.1 - 23-30, 43-46, 67-70
§7.2 - 23-28, 39-42
§7.3 - 21-24, 33-36
§7.4 - 31-34
§7.5 - 33-36, 37-40
§7.6 - 15-18, 23-26, 31-34
§7.7 - # 24, 28, 29
§7.8 - # 73, 74, 75